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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/500,776	06/30/2004	David Neville Prugh	CL1927USPCT	8496

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EXAMINER	
THOMPSON, MELISSA	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/500,776	PRUGH ET AL.	
	Examiner	Art Unit	
	Melissa B. Thompson	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 July 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-26* is/are pending in the application.

4a) Of the above claim(s) *23-26* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) *1-26* are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *30 June 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *see office action*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group I, claim(s) 1-22, drawn to a process of manufacturing a catalyst coated membrane.

Group II, claim(s) 23-36, drawn to a fuel cell comprising a catalyst coated membrane.

2. The inventions listed as Groups I and II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: The product of Group II could be made by CVD (chemical vapor deposition); it does not need to be done by applying an electrocatalyst coating and then drying.

3. During a telephone conversation with Tom Gorman on May 3, 2007 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-22. Affirmation of this election must be made by applicant in replying to this Office action. Claims 23-36 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

4. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim

remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Information Disclosure Statement

5. The IDS filed September 17, 2004 and July 21, 2005 have been considered.

Drawings

6. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "12" has been used to designate both the polymer membrane and the first surface. The first surface is designated as 12' in the specification, but is not shown in the drawings. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

7. The disclosure is objected to because of the following informalities: Page 15, line 8, the word "second" is duplicated and one should be removed.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 1-22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

10. Claims 1, 5, 7, 10-12, and 16 recite the limitation "the electrocatalyst coating" in lines 11 and 22 of claim 1, line 1 of claims 5, 7, and 16, and line 2 of claims 10-12. There is insufficient antecedent basis for this limitation in the claim. The term "at least one electrocatalyst coating" is defined in claim 1, however, the repeated use of "electrocatalyst coating' in subsequent claims needs to be more specific about which one of the electrocatalyst coating is being claimed.

11. Claim 14 recites the limitation "abrasion-resistant" in line 2. There is insufficient antecedent basis for this limitation in the claim.

12. Claim 20 recites the limitation "ambient temperature" in line 2. There is insufficient antecedent basis for this limitation in the claim. It is unclear if the drying is conducted at several temperature or if the claim should read ambient temperature.

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

14. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

15. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

16. Claims 1-8, 10-12, 16-18, and 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marsacq et al. (WO 01/65623 A1 as evidence by U.S. Publication Number 2003/0022054, relied upon for English translation).

Marsacq et al. teach a method for preparing an electrode-membrane assembly. Marsacq et al. teach that the electrodes are composed of a Teflon coated porous felt, loaded with carbon black, and covered with a finely divided noble metal such as platinum, as a catalyst (paragraph 11). Marsacq et al. teach

applying an electrocatalyst coating to an element comprising a polymer membrane having a first and second surface and a first dimensionally stable temporary substrate where in the coating composition is applied to at least portions of the first surface of the polymer membrane (paragraphs 56-58, as applied to claim 1a). The formed electrode is then dried completely (paragraph 59, as applied to claim 1b). The first dimensionally stable temporary substrate is removed from the polymer membrane (paragraph 60, as applied to claim 1d). Marsacq et al. teach applying an electrocatalyst coating composition to at least a portion of the second surface of the polymer membrane (paragraphs 81-83, as applied to claim 1e). The formed electrode assembly is then dried completely (paragraph 83, as applied to claim 1f).

Marsacq et al. teach applying the polymer membrane to a first dimensionally stable temporary substrate (paragraph 56, as applied to claim 2). The substrate can be glass, aluminum, polyester, etc., illustrating that the substrate is dimensionally stable (paragraph 117, as applied to claims 2, 21, and 22).

Marsacq et al. teach that the process of applying the polymer membrane to a first dimensionally stable temporary substrate is done by lamination (paragraph 75, as applied to claim 3 and 18).

Marsacq et al. teach that the electrocatalyst coating comprises an electrocatalyst, an ion exchange polymer, and a liquid medium (paragraph 11, as applied to claims 5-8).

Marsacq et al. teach assembling large numbers of these structures (paragraph 16), which is interpreted as repeating the steps of this process to form multiple electrode layers covering the same part of the surface membrane (as applied to claim 10).

Marsacq et al. teach that the electrocatalyst coating composition and drying steps are repeated to form multiple electrode layers (paragraph 16) that vary in composition and have a non-uniform distribution of the electrocatalyst layer across the electrode layer. Each electrode would contain a slight variation in composition unless a specific process was stated to ensure that each electrode contained the exact composition as the next (as applied to claims 11 and 17). Each electrode would also have a non-uniform distribution because it is impossible to ensure that each electrode contained the same amount of every material combined to make the layer (as applied to claim 12).

Marsacq et al. teach that the electrocatalyst coating composition applied to the opposite surface of the polymer membrane to form the second electrode is in registration with the first electrode on the first surface (example 2, as applied to claim 16).

Marsacq et al. teach that drying is conducted at ambient temperatures (paragraph 73, as applied to claim 20). There is no specific temperature claimed, even though it is stated in the specification. However, Marsacq et al. teach that the temperature range for drying is between 70°C and 150°C, which is close to the range stated in the specification. Therefore, unless unexpected results for

the use of a specific temperature are shown, then Marsacq et al. fit the claimed drying temperatures.

Marsacq et al. do not teach applying second dimensionally stable substrate to a first electrode and then removing it.

It would have been obvious to one of ordinary skill in the art at the time of the invention to include a temporary substrate on the surface of the first electrode to protect it from being damage while the rest of the membrane electrode assembly (MEA) was being built. This temporary layer is used only for protection and is eventually removed from the surface after completion of the MEA. By putting this temporary substrate on and then removing it does not show a novelty in the process and due to its lack of criticality (see as how it is removed shortly after application), it is not patentably distinct.

17. Claims 9 and 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marsacq et al. (WO 01/65623 A1 as evidence by U.S. Publication Number 2003/0022054, relied upon for English translation) as applied to claim 1 above, and further in view of Lertola (U.S. Publication Number 2005/0255372 A1).

The disclosure of Marsacq et al. has been discussed above and is incorporated herein.

Marsacq et al. do not teach applying the electrocatalyst coating composition is accomplished by flexographic printing and that applying a nonelectrocatalytic coating over at least part of the same area of the substrate which is covered by an electrode layer.

Lertola teaches that the electrocatalyst coating can be applied by flexographic printing (paragraph 45, as applied to claim 9).

Lertola teaches that a protective, abrasion resistant, or sealant layer is applied to the electrode layer (paragraphs 52 and 106, as applied to claims 13-15).

It would have been obvious to one of ordinary skill in the art at the time of the invention to apply the electrocatalyst coating through flexographic printing. As evidenced by Lertola flexographic printing is a commonly used technique for applying an electrocatalyst coating. Therefore, it would have been obvious to use this technique to apply the electrodes of Marsacq et al.

It would have been obvious to one of ordinary skill in the art at the time of the invention to include the protective, abrasion resistant, or sealant layer of Lertola on the electrode of Marsacq et al. By including this protective, abrasion resistant, or sealant layer, the electrode can be protected from contamination or deformation before use.

18. Claims 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Marsacq et al. (WO 01/65623 A1 as evidence by U.S. Publication Number 2003/0022054, relied upon for English translation) as applied to claim 1 above, and further in view of Sompalli et al. (U.S. Patent Number 6,524,736 B1).

The disclosure of Marsacq et al. has been discussed above and is incorporated herein.

Marsacq et al. do not teach that the removing in step 1d is by peeling.

Sompalli et al. teach peeling the substrate off the membrane (column 8, lines 6-8, as applied to claim 19).

It would have been obvious to one of ordinary skill in the art at the time of the invention to remove the substrate of Marsacq et al. using a peeling process like the one in Sompalli et al. Removing the substrate could be done in many ways, therefore it would be an obvious choice to peel the substrate off.

Double Patenting

19. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

20. Claims 1, 5-9, 17, and 19-22 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-15 and 18-20 of copending Application No. 10/490,068. Although the conflicting claims are not identical, they are not patentably distinct from each other because the basic concept

is the same. In both applications a membrane electrode assembly (MEA) is being made by a flexographic printing method. In application 10/490,068 the MEA is made in a stack starting with a substrate, then a first electrode, a polymer electrolyte, and finally a second electrode. After the entire MEA is made, then the substrate is removed by peeling. In the current application the MEA is made in a two-step process; a polymer electrolyte is applied to a first substrate and then a first electrode is applied to the polymer electrolyte. Then the first substrate is removed, a second substrate is applied to the first electrode, a second electrode is applied to the other side of the polymer electrolyte, and finally the second substrate is removed. The same product is achieved in both processes with slight modification to the steps used. However, application 10/490,068 is the more cost effective product and would more likely be chosen to be used as a process for making an MEA. The current application does not show a patentably distinct difference from the application 10/490,068, it only adds an added step of applying and then removing a temporary substrate, which is believed to be obvious.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 103

21. Claims 1, 5-9, 17, and 19-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over O'Brien (U.S. Provisional Application 60/349,034 relying upon U.S. Publication Number 2004/0201122 A1).

O'Brien teaches a process for manufacturing a catalyst coated membrane wherein the electrocatalyst coating composition comprises an electrocatalyst, an ion exchange polymer, and a liquid medium (claim 14 of the prior art, as applied to claim 5 of the instant application).

O'Brien teaches that the ion exchange polymer is perfluorinated (paragraph 8, as applied to claim 6).

O'Brien teaches that the electrocatalyst coating composition further comprises a fluorinated polymer and that the fluorinated polymer is PTFE fibrils (claims 2 and 3 of the prior art, as applied to claims 7 and 8 of the instant application).

O'Brien teaches that the process for applying the electrocatalyst coating composition to the membrane is accomplished by flexographic printing (paragraph 22, as applied to claim 9).

O'Brien teaches that the electrocatalyst coating composition and drying steps are repeated to form multiple electrode layers covering the same part of the surface (claim 6 of the prior art, as applied to claim 10 of the instant application).

O'Brien teaches that the application of the electrocatalyst coating composition and drying steps are repeated to form multiple electrode layers that vary in composition among multiple layers (claim 7 of the prior art, as applied to claim 11 of the instant application).

O'Brien teaches that the application of the electrocatalyst coating composition and drying steps provide an electrode layer with a predetermined non-uniform distribution of electrocatalyst across the electrode (claim 8 of the prior art, as applied to claim 12 of the instant application).

O'Brien teaches applying a non-electrocatalytic coating composition to form a non-electrocatalytic layer over at least part of the same area of the substrate which is covered by an electrode layer (claim 9 of the prior art, as applied to claim 13 of the instant application).

O'Brien teaches that the non-electrocatalytic layer is an abrasion-resistant coating covering the electrode layer (claim 10 of the prior art, as applied to claim 14 of the instant application).

O'Brien teaches that the non-electrocatalytic layer is a sealant covering the electrode layer (claim 11 of the prior art, as applied to claim 15 of the instant application).

O'Brien teaches the electrocatalyst coating composition applied onto the opposite surface of the polymer membrane to form the second electrode is in registration with the first electrode (claim 12 of the prior art, as applied to claim 16 of the instant application).

O'Brien teaches that the catalyst coating composition applied to the first surface is different from tat applied to the second surface of the polymer membrane (claim 13 of the prior art, as applied to claim 17 of the instant application).

O'Brien teaches that removing the temporary dimensionally stable substrate is done by peeling (paragraph 28, as applied to claim 19).

O'Brien teaches that the drying is conducted at ambient temperatures (claim 18 of the prior art, as applied to claim 20 of the instant application).

O'Brien teaches that the temporary supports is selected from the group consisting of polyesters, polyamides, polycarbonates, fluoropolymers, polyacetals, polyolefins, and polyimides (claim 19 of the prior art, as applied to claim 21 of the instant application).

O'Brien teaches that the temporary support is polyester (claim 20 of the prior art, as applied to claim 22 of the instant application).

It would have been obvious to one of ordinary skill in the art at the time of the invention to make the process of O'Brien done in more steps including a separate step for adding each electrode to the polymer electrolyte. The same product is achieved in both processes with slight modification to the steps used. However, the process of O'Brien is the more cost effective product and would more likely be chosen to be used as a process for making an MEA. The current application does not show a patentably distinct difference from O'Brien, it only adds an added step of applying and then removing a temporary substrate, which is believed to be obvious.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melissa B. Thompson whose telephone number is (571)

272-2758. The examiner can normally be reached on Monday through Friday from 8am to 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MBT

GREGG CANTELMO
PRIMARY EXAMINER